

WHAT IS CLAIMED IS:

1. A precision video gauging machine system for measuring a workpiece comprising:
 - a base;
 - a carriage for supporting the workpiece to be measured, vertically movable with respect to said base;
 - a carriage feed mechanism for moving the workpiece supported on said carriage including a rotatable knob mounted by linkage to the carriage and selectively driving a drive member in frictional engagement with said carriage, whereby when said knob is rotated, the linkage drives said drive member to move said carriage and supported workpiece vertically with respect to said base in a direction based upon the direction of rotation;
 - a carriage lock mechanism for selectively coupling and decoupling said carriage feed mechanism to said carriage;
 - a column, horizontally movable with respect to said base;
 - a video based coordinate measuring system mounted on said column comprising:
 - a video camera producing a video signal having a first optical axis and a focal plane where an image of the workpiece to be measured is focused, said camera being mounted to move horizontally with respect to the workpiece to be measured and generating an image in the form of a plurality of pixels;
 - a video monitor responsive to said video signal connected to said video camera for displaying an image of the workpiece being on said focal plane;

a first light source outputting light to backlight illuminate the workpiece supported on said carriage for said video based coordinate measuring system;

a second light source illuminating the surface of the workpiece supported on said carriage for said video based coordinate measuring system;

means associated with said base for measuring the position of said video based coordinate measuring system;

a feed mechanism for moving said video camera of said video based coordinate measuring system means including a rotatable knob mounted by linkage to the base and selectively driving a drive member in frictional engagement with said video camera, whereby when the knob is rotated, the linkage drives the drive member to move the video camera horizontally in a direction based upon the direction of rotation; and,

a lock mechanism for selectively coupling and decoupling the feed mechanism to said video camera of said video based coordinate measuring system.

2. A precision video gauging machine system for measuring a workpiece comprising:

a base;

a carriage for supporting the workpiece to be measured, vertically movable with respect to said base;

a column, horizontally movable with respect to said base; and,

a video based coordinate measuring system mounted on said column comprising:

a video camera producing a video signal having a first optical axis and a focal plane where an image of the workpiece to be measured is focused, said camera

being mounted to move horizontally with respect to the workpiece to be measured and generating an image in the form of a plurality of pixels; and,

a video monitor responsive to said video signal connected to said video camera for displaying an image of the workpiece being on said focal plane.

3. A precision video gauging machine system for measuring a workpiece as in claim 2 further comprising:

means associated with said base for measuring the position of said video based coordinate measuring system.

4. A precision video gauging machine system for measuring a workpiece as in claim 2 further comprising:

a feed mechanism for moving said video camera of said video based coordinate measuring system means including a rotatable knob mounted by linkage to the base and selectively driving a drive member in frictional engagement with said video camera, whereby when the knob is rotated, the linkage drives the drive member to move the video camera horizontally in a direction based upon the direction of rotation.

5. A precision video gauging machine system for measuring a workpiece as in claim 4 further comprising:

a lock mechanism for selectively coupling and decoupling the feed mechanism to said video camera of said video based coordinate measuring system.

6. A precision video gauging machine system for measuring a workpiece as in claim 2 further comprising:

a carriage feed mechanism for moving the workpiece supported on said carriage including a rotatable knob mounted by linkage to the carriage and selectively driving a drive member in frictional engagement with said carriage, whereby when said knob is rotated, the linkage drives said drive member to move said carriage and supported workpiece vertically with respect to said base in a direction based upon the direction of rotation.

7. A precision video gauging machine system for measuring a workpiece as in claim 6 further comprising:

a carriage lock mechanism for selectively coupling and decoupling said carriage feed mechanism to said carriage.

8. A precision video gauging machine system for measuring a workpiece as in claim 2 further comprising:

a light source outputting light to backlight illuminate the workpiece supported on said carriage for said video camera of said video based coordinate measuring system.

9. A precision video gauging machine system for measuring a workpiece as in claim 2 further comprising:

a light source illuminating the surface of the workpiece supported on said carriage for said video camera of said video based coordinate measuring system.

10. A precision video gauging machine system for measuring a workpiece comprising:

- a base;
- a carriage for supporting the workpiece to be measured, vertically movable with respect to said base;
- a column, horizontally movable with respect to said base; and,
- video based coordinate measuring means mounted on said column.

11. A precision video gauging machine system for measuring a workpiece as in claim 10 further comprising:

- means associated with said base for measuring the position of said video based coordinate measuring means.

12. A precision video gauging machine system for measuring a workpiece as in claim 10 further comprising:

- a feed mechanism for moving said video based coordinate measuring means including a rotatable knob mounted by linkage to the base and selectively driving a drive member in frictional engagement with said video based coordinate measuring means, whereby when the knob is rotated, the linkage drives the drive member to move the video based coordinate measuring means horizontally in a direction based upon the direction of rotation.

13. A precision video gauging machine system for measuring a workpiece as in claim 12 further comprising:

a lock mechanism for selectively coupling and decoupling the feed mechanism to said video based coordinate measuring means.

14. A precision video gauging machine system for measuring a workpiece as in claim 10 further comprising:

a carriage feed mechanism for moving the workpiece supported on said carriage including a rotatable knob mounted by linkage to the carriage and selectively driving a drive member in frictional engagement with said carriage, whereby when said knob is rotated, the linkage drives said drive member to move said carriage and supported workpiece vertically with respect to said base in a direction based upon the direction of rotation.

15. A precision video gauging machine system for measuring a workpiece as in claim 14 further comprising:

a carriage lock mechanism for selectively coupling and decoupling said carriage feed mechanism to said carriage.

16. A precision video gauging machine system for measuring a workpiece as in claim 10 further comprising:

a light source outputting light to backlight illuminate the workpiece supported on said carriage for said video based coordinate measuring system.

17. A precision video gauging machine system for measuring a workpiece as in claim 10 further comprising:

a light source illuminating the surface of the workpiece supported on said carriage for said video based coordinate measuring system.

18. A precision video gauging machine system for measuring a workpiece as in claim 10 wherein said video based coordinate measuring system mounted on said column further comprises:

a video camera producing a video signal having a first optical axis and a focal plane where an image of the workpiece to be measured is focused, said camera being mounted to move horizontally with respect to the workpiece to be measured and generating an image in the form of a plurality of pixels; and,

a video monitor responsive to said video signal connected to said video camera for displaying an image of the workpiece being on said focal plane.

19. A precision video gauging machine system for measuring a workpiece as in claim 18 further comprising:

a feed mechanism for moving said video camera of said video based coordinate measuring system means including a rotatable knob mounted by linkage to the base and selectively driving a drive member in frictional engagement with said video camera, whereby when the knob is rotated, the linkage drives the drive member to move the video camera horizontally in a direction based upon the direction of rotation.

20. A precision video gauging machine system for measuring a workpiece as in claim 19 further comprising:

a lock mechanism for selectively coupling and decoupling the feed mechanism to said video camera of said video based coordinate measuring system.

21. A precision video gauging machine system for measuring a workpiece as in claim 10 further comprising:

means associated with said base for measuring the position of said video based coordinate measuring system.